



*Amals*  
**RECEIVED**  
MAY 01 2003  
TECH CENTER 1600/2900

1

SEQUENCE LISTING

C3

<110> Monia, Brett P.

<120> ANTISENSE OLIGONUCLEOTIDE MODULATION OF raf GENE EXPRESSION

<130> ISPH-0625

<140> US 10/057,550  
<141> 2002-01-25

<150> US 09/506,073  
<151> 2000-02-18

<150> US 09/143,214  
<151> 1998-08-28

<150> PCT/US98/13961  
<151> 1998-07-06

<150> US 08/888,982  
<151> 1997-07-07

<150> US 08/756,806  
<151> 1996-11-26

<150> PCT/US95/07111  
<151> 1995-05-31

<150> US 08/250,856  
<151> 1994-05-31

<160> 108

<170> PatentIn version 3.1

<210> 1  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 1  
tgaaggtgag ctggagccat  
20

<210> 2  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 2

gctccattga tgcagcttaa

2  
20

<210> 3  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 3  
ccctgtatgt gctccattga  
20

<210> 4  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 4  
ggtgcaaagt caactagaag  
20

<210> 5  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 5  
attcttaaac ctgagggagc  
20

<210> 6  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 6  
gatgcagctt aaacaattct  
20

<210> 7  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 7  
cagcactgca aatggcttcc  
20

<210> 8  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 8  
tcccgcctgt gacatgcatt  
20

<210> 9  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 9  
gccgagtgcc ttgcctggaa  
20

<210> 10  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 10  
agagatgcag ctggagccat  
20

<210> 11  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 11  
aggtgaaggc ctggagccat  
20

<210> 12  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 12  
gtctggcgct gcaccactct  
20

<210> 13  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 13  
ctgatttcca aaatcccatg  
20

<210> 14  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 14  
ctgggctggt tggcgcctta  
20

<210> 15  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 15  
tcaggcctgg actgcctgct  
20

<210> 16  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 16  
ggtgagggag cgggagggcg  
20

<210> 17  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 17  
cgctcctcct ccccgcggcg  
20

<210> 18  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 18  
ttcggcggca gcttctcgcc  
20

<210> 19  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 19  
gccgccccaa cgtcctgtcg  
20

<210> 20  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 20  
tcctcctccc cgcggcgggt  
20

<210> 21  
<211> 20  
<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 21

ctcgcccgct cctcctcccc

20

<210> 22

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 22

ctggcttctc ctctccct

20

<210> 23

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 23

cgggaggcgg tcacattcgg

20

<210> 24

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 24

tctggcgctg caccactctc

20

<210> 25

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 25

ttctcgcccg ctctcctcc

20

<210> 26  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 26  
ttctcctcct cccctggcag  
20

<210> 27  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 27  
cctgctggct tctcctcctc  
20

<210> 28  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 28  
gtcaagatgg gctgaggtgg  
20

<210> 29  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 29  
ccatcccga cagtcaccac  
20

<210> 30  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 30  
atgagctcct cgccatccag  
20

<210> 31  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 31  
aatgctggtg gaacttgtag  
20

<210> 32  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 32  
ccggtacccc aggttcttca  
20

<210> 33  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 33  
ctgggcagtc tgccgggcca  
20

<210> 34  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 34  
cacctcagct gccatccaca  
20

<210> 35



<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 35  
gagattttgc tgaggccgg  
20

<210> 36  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 36  
gcactccgct caatcttggg  
20

<210> 37  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 37  
ctaaggcaca aggcgggctg  
20

<210> 38  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 38  
acgaacattg attggctggt  
20

<210> 39  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 39

gtatccccaa agccaagagg 10  
20

<210> 40  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 40  
catcagggca gagacgaaca  
20

<210> 41  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 41  
ggaacatctg gaatttggtc  
20

<210> 42  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 42  
gattcactgt gacttcgaat  
20

<210> 43  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 43  
gcttccattt ccagggcagg  
20

<210> 44  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 44  
aagaaggcaa tatgaagtta  
20

<210> 45  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 45  
gtggtgcctg ctgactcttc  
20

<210> 46  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 46  
ctggtggcct aagaacagct  
20

<210> 47  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 47  
gtatgtgctc cattgatgca  
20

<210> 48  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 48  
tccctgtatg tgctccattg  
20

<210> 49  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 49  
atacttatac ctgagggagc  
20

<210> 50  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 50  
atgcattctg cccccaagga  
20

<210> 51  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 51  
gacttgtata cctctggagc  
20

<210> 52  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 52  
actggcactg caccactgtc  
20

<210> 53  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 53  
aagttctgta gtaccaaagc  
20

<210> 54  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 54  
ctcctggaag acagattcag  
20

<210> 55  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 55  
ttgagcatgg ggaatgtggg  
20

<210> 56  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 56  
aacatcaaca tccacttgcg  
20

<210> 57  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 57  
tgtagccaac agctggggct  
20

<210> 58  
<211> 20  
<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 58

ctgagagggc tgagatgcgg

20

<210> 59

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 59

gctcctggaa gacaaaattc

20

<210> 60

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 60

tgtgactaga gaaacaaggc

20

<210> 61

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 61

caagaaaacc tgtattcctg

20

<210> 62

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 62

ttgtcagggtg caataaaaac

20

<210> 63  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 63  
ttaaaataac ataattgagg  
20

<210> 64  
<211> 2977  
<212> DNA  
<213> Homo sapiens

<400> 64  
ccgaatgtga ccgcctcccg ctccctcacc cgccgcgggg aggaggagcg ggcgagaagc  
60

tgccgccgaa cgacaggacg ttggggcggc ctggctccct caggtttaag aattgtttaa  
120

gctgcatcaa tggagcacat acaggagagct tggaagacga tcagcaatgg ttttggtatc  
180

aaagatgccg tgtttgatgg ctccagctgc atctctccta caatagttca gcagtttggc  
240

tatcagcgcc gggcatcaga tgatggcaaa ctacagatc cttctaagac aagcaacact  
300

atccgtgttt tcttgccgaa caagcaaaga acagtgggtca atgtgcgaaa tggaatgagc  
360

ttgcatgact gccttatgaa agcactcaag gtgagggggc tgcaaccaga gtgctgtgca  
420

gtgttcagac ttctccacga acacaaaggt aaaaaagcac gcttagattg gaatactgat  
480

gctgcgtctt tgattggaga agaacttcaa gtagatttcc tggatcatgt tcccctcaca  
540

acacacaact ttgctcggaa gacgttcctg aagcttgcct tctgtgacat ctgtcagaaa  
600

ttcctgctca atggatttcg atgtcagact tgtggctaca aatttcatga gcactgtagc  
660

accaaagtac ctactatgtg tgtggactgg agtaacatca gacaactctt attgtttcca  
720

aattccacta ttggtgatag tggagtccca gcactacctt ctttgactat gcgtcgtatg  
780

cgagagtctg tttccaggat gcctgttagt tctcagcaca gatattctac acctcacgcc  
840

ttcaccttta acacctccag tccctcatct gaagggtccc tctcccagag gcagaggtcg  
900

acatccacac ctaatgtcca catggtcagc accacgctgc ctgtggacag caggatgatt  
960

gaggatgcaa ttogaagtca cagcgaatca gcctcacctt cagccctgtc cagtagcccc  
1020

aacaatctga gcccaacagg ctggtcacag ccgaaaaccc ccgtgccagc acaaagagag  
1080

cgggcaccag tatctgggac ccaggagaaa aacaaaatta ggccctcgtg acagagagat  
1140

tcaagctatt attgggaaat agaagccagt gaagtgatgc tgtccactcg gattgggtca  
1200

ggctcttttg gaactgttta taagggtaaa tggcacggag atgttgagct aaagatccta  
1260

aaggttgtcg acccaacccc agagcaattc caggccttca ggaatgaggt ggctgttctg  
1320

cgcaaacac ggcatgtgaa cattctgctt ttcattgggt acatgacaaa ggacaacctg  
1380

gcaattgtga ccagtggtg cgagggcagc agcctctaca aacacctgca tgtccaggag  
1440

accaagtttc agatgttcca gctaattgac attgcccggc agacgggtca ggaatggac  
1500

tatttgcatt caaagaacat catccataga gacatgaaat ccaacaatat atttctccat  
1560

gaaggcttaa cagtgaaaat tggagatttt ggtttgcaa cagttaaagtc acgctggagt  
1620

ggttctcagc aggttgaaca acctactggc tctgtcctct ggatggcccc agaggtgatc  
1680

cgaatgcagg ataacaaccc attcagtttc cagtcggatg tctactccta tggcatcgta  
1740

ttgtatgaac tgatgacggg ggagcttctt tattctcaca tcaacaaccg agatcagatc  
1800

atcttcatgg tgggcccagg atatgcctcc ccagatctta gtaagctata taagaactgc  
1860

cccaaagcaa tgaagaggct ggtagctgac tgtgtgaaga aagtaaagga agagaggcct  
1920

ctttttcccc agatcctgtc ttccattgag ctgctccaac actctctacc gaagatcaac  
1980



cgagcgctt ccgagccatc cttgcatcgg gcagcccaca ctgaggatat caatgcttgc  
2040

acgctgacca cgtccccgag gctgcctgtc ttctagttga ctttgcacct gtcttcaggc  
2100

tgccagggga ggaggagaag ccagcaggca ccacttttct gtcaccttc tccagaggca  
2160

gaacacatgt tttcagagaa gctctgctaa ggaccttcta gactgctcac agggccttaa  
2220

cttcatgttg ctttcttttc tatccctttg ggccctggga gaaggaagcc atttgcaagt  
2280

ctggtgtgtc ctgctccctc cccacattcc ccattgctcaa ggcccagcct tctgtagatg  
2340

cgcaagtgga tgttgatggt agtacaaaaa gcagggggccc agcccagct gttggctaca  
2400

tgagtattta gaggaagtaa ggtagcaggc agtccagccc tgatgtggag acacatggga  
2460

ttttggaaat cagcttcttg aggaatgcat gtcacaggcg ggactttctt cagagagtgg  
2520

tgcagcgcca gacattttgc acataaggca ccaaacagcc caggactgcc gagactctgg  
2580

ccgcccgaag gagcctgctt tggactatg gaacttttct taggggacac gtcctccttt  
2640

cacagcttct aagggtgtca gtgcattggg atggttttcc aggcaaggca ctcggccaat  
2700

ccgcatctca gccctctcag gagcagtctt ccattcatgct gaattttgtc ctccaggagc  
2760

tgccctatg gggcgggccc cagggccagc ctgtttctct aacaaacaaa caaacaacaa  
2820

gccttgtttc tctagtcaca tcatgtgtat acaaggaagc caggaataca ggttttcttg  
2880

atgatttggg ttttaatttt gtttttattg cacctgacaa aatacagtta tctgatggtc  
2940

cctcaattat gttattttta taaaataaat taaattt  
2977

<210> 65  
<211> 2458  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (1088)..(1088)

<223> "n" represents a, c, g, or t

<400> 65

tgaccaata aggggtggaag gctgagtcct gcagagccaa taacgagagt ccgagaggcg  
60

acggaggcgg actctgtgag gaaacaagaa gagaggccca agatggagac ggcggcggct  
120

gtagcggcgt gacaggagcc ccatggcacc tgcccagccc cacctcagcc catcttgaca  
180

aaatctaagg ctccatggag ccaccacggg gccccctgc caatggggcc gagccatccc  
240

gggcagtggg caccgtcaaa gtatacctgc ccaacaagca acgcacggtg gtgactgtcc  
300

gggatggcat gagtgtctac gactctctag acaaggccct gaagggtcgg ggtctaaatc  
360

aggactgctg tgtggtctac cgactcatca agggacgaaa gacgggtcact gcctgggaca  
420

cagccattgc tccccctgat ggcgaggagc tcattgtcga ggtccttgaa gatgtccgc  
480

tgaccatgca caattttgta cggaagacct tcttcagcct ggcgttctgt gacttctgcc  
540

ttaagtttct gttccatggc ttccgttgcc aaacctgtgg ctacaagttc caccagcatt  
600

gttcctccaa ggtccccaca gtctgtgttg acatgagtac caaccgcaa cagttctacc  
660

acagtgtcca ggatttgtcc ggaggctcca gacagcatga ggctccctcg aaccgcccc  
720

tgaatgagtt gctaaccccc cagggtccca gccccgcac ccagcaactgt gaccgggagc  
780

acttccccctt cctgccccca gccaatgccc ccctacagcg catccgctcc acgtccactc  
840

ccaacgtcca tatggtcagc accacggccc ccatggactc caacctcatc cagctcactg  
900

gccagagttt cagcactgat gctgccggtg gtagaggagg tagtgatgga accccccggg  
960

ggagccccag cccagccagc gtgtcctcgg ggaggaagtc cccacattcc aagtcaccag  
1020

cagagcagcg cgagcggaag tccttggccg atgacaagaa gaaagtgaag aacctggggg  
1080

accggganc caggctattac tgggaggtac caccagtgga ggtgcagctg ctgaagagga  
1140

tcgggacggg ctcgtttggc accgtgtttc gagggcgggtg gcatggcgat gtggccgtga  
1200

aggtgctcaa ggtgtcccag cccacagctg agcaggccca ggctttcaag aatgagatgc  
1260

aggtgctcag gaagacgcga catgtcaaca tcttgctgtt tatgggcttc atgaccggc  
1320

cgggatttgc catcatcaca cagtgggtgtg agggctccag cctctacat cacctgcatg  
1380

tggccgacac acgcttcgac atgggtccagc tcatcgacgt ggcccggcag actgcccagg  
1440

gcatggacta cctccatgcc aagaacatca tccaccgaga tctcaagtct aacaacatct  
1500

tcctacatga ggggctcacg gtgaagatcg gtgactttgg cttggccaca gtgaagactc  
1560

gatggagcgg ggcccagccc ttggagcagc cctcaggatc tgtgctgtgg atggcagctg  
1620

aggtgatccg tatgcaggac ccgaaccctt acagcttcca gtcagacgtc tatgcctacg  
1680

gggttgctgt ctacgagctt atgactggct cactgcctta cagccacatt ggctgccgtg  
1740

accagattat ctttatgggtg ggccgtggct atctgtcccc ggacctcagc aaaatctcca  
1800

gcaactgccc caaggccatg cggcgccctgc tgtctgactg cctcaagttc cagcgggagg  
1860

agcggccctt cttccccag atcctggcca caattgagct gctgcaacgg tcaactccca  
1920

agattgagcg gagtgcctcg gaacctctt tgcaccgcac ccaggccgat gagttgcctg  
1980

cctgcctact cagcgcagcc cgccttgtgc cttaggcccc gcccaagcca ccagggagcc  
2040

aatctcagcc ctccacgcca aggagccttg cccaccagcc aatcaatgtt cgtctctgcc  
2100

ctgatgctgc ctcaggatcc cccattcccc accctgggag atgagggggg ccccatgtgc  
2160

ttttccagtt cttctggaat tgggggaccc ccgccaaaga ctgagcccc tgtctcctcc  
2220

atcatttggt ttctcttggt ctttggggat acttctaaat tttgggagct cctccatctc  
2280

caatggctgg gatttggtgc agggattcca ctcagaacct ctctggaatt tgtgcctgat  
2340

gtgccttcca ctggattttg gggttcccag caccocatgt ggattttggg gggtccttt  
2400

tgtgtctccc ccgccattca aggactcctc tctttcttca ccaagaagca cagaattc  
2458

<210> 66  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 66  
ccacaccact catctcatct  
20

<210> 67  
<211> 2510  
<212> DNA  
<213> Homo sapiens

<400> 67  
agcctcccgg cccctcccc gcccgacagc ggccgctcgg gcccggctc tcggttataa  
60

gatggcggcg ctgagcgggtg gcggtggtgg cggcgcgagg ccggggccagg ctctgttcaa  
120

cggggacatg gagcccagg ccggcgccgg ccggcccggc gcctcttcgg ctgcggaccc  
180

tgccattccg gaggagggtg ggaatatcaa acaaatgatt aagttgacac aggaacatat  
240

agaggcccta ttggacaaat ttggtgggga gcataatcca ccatcaatat atctggaggc  
300

ctatgaagaa tacaccagca agctagatgc actccaacaa agagaacaac agttattgga  
360

atctctgggg aacggaactg atttttctgt ttctagctct gcatcaatgg ataccgttac  
420

atcttcttcc tcttctagcc tttcagtgt accttcatct ctttcagttt ttcaaaatcc  
480

cacagatgtg gcacggagca accccaagtc accacaaaaa cctatcgta gagtcttct  
540

gccaacaaa cagaggacag tggtagctgc aagggtgtgga gttacagtcc gagacagtct  
600

aaagaaagca ctgatgatga gaggtctaata cccagagtgc tgtgctgttt acagaattca  
660

ggatggagag aagaaaccaa ttggttggga cactgatatt tcctggctta ctggagaaga  
720

attgcatgtg gaagtgttgg agaatgttcc acttacaaca cacaactttg tacgaaaaac  
780

gtttttcacc ttagcatttt gtgacttttg tcgaaagctg cttttccagg gtttccgctg  
840

tcaaacatgt ggttataaat ttcaccagcg ttgtagtaca gaagttccac tgatgtgtgt  
900

taattatgac caacttgatt tgctgtttgt ctccaagttc tttgaacacc acccaatacc  
960

acaggaagag gcgtccttag cagagactgc cctaacatct ggatcatccc cttccgcacc  
1020

cgcctcggac tctattgggc cccaaattct caccagtccg tctccttcaa aatccattcc  
1080

aattccacag cccttccgac cagcagatga agatcatcga aatcaatttg ggcaacgaga  
1140

ccgatcctca tcagctccca atgtgcatat aaacacaata gaacctgtca atattgatga  
1200

cttgattaga gaccaaggat ttcgtggtga tggaggatca accacagggt tgtctgctac  
1260

ccccctgcc tcattacctg gctcactaac taacgtgaaa gccttacaga aatctccagg  
1320

acctcagcga gaaaggaagt catcttcac ctcagaagac aggaatcgaa tgaaaacact  
1380

tggtagacgg gactcgagtg atgattggga gattcctgat gggcagatta cagtgggaca  
1440

aagaattgga tctggatcat ttggaacagt ctacaaggga aagtggcatg gtgatgtggc  
1500

agtgaatatg ttgaatgtga cagcacctac acctcagcag ttacaagcct tcaaaaatga  
1560

agtaggagta ctcaggaaaa cagcatgt gaatcccta ctcttcattg gctattccac  
1620

aaagccacaa ctggctattg ttaccagtg gtgtgagggc tccagcttgt atcaccatct  
1680

ccatatcatt gagaccaaatt ttgagatgat caaacttata gatattgcac gacagactgc  
1740

acagggcatg gattacttac acgccaagtc aatcatccac agagacctca agagtaataa  
1800

tatatttctt catgaagacc tcacagtaaa aataggtgat tttggtctag ctacagtga  
1860

atctcgatgg agtgggtccc atcagtttga acagttgtct ggatccattt tgtggatggc  
1920

accagaagtc atcagaatgc aagataaaaa tccatacagc tttcagtcag atgtatatgc  
1980

atttgggatt gttctgtatg aattgatgac tggacagtta cttattcaa acatcaacaa  
2040

cagggaccag ataattttta tgggtgggacg aggatacctg tctccagatc tcagtaaggt  
2100

acggagtaac tgtccaaaag ccatgaagag attaattggca gagtgcctca aaaagaaaag  
2160

agatgagaga ccactctttc cccaaattct cgcctctatt gagctgctgg cccgctcatt  
2220

gccaaaaatt caccgcagtg catcagaacc ctctttgaat cgggctgggt tccaaacaga  
2280

ggattttagt ctatatgctt gtgcttctcc aaaaacaccc atccaggcag ggggatatgg  
2340

tgcgtttcct gtccactgaa acaaatgagt gagagagttc aggagagtag caacaaaagg  
2400

aaaataaatg aacatatgtt tgcttatatg ttaaattgaa taaaatactc tctttttttt  
2460

taaggtggaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaccc  
2510

<210> 68  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 68  
attttgaagg agacggactg  
20

<210> 69  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 69  
tggattttga aggagacgga  
20

<210> 70  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 70  
cgttagttag tgagccaggt  
20

<210> 71  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 71  
atttctgtaa ggctttcacg  
20

<210> 72  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 72  
cccgtctacc aagtgttttc  
20

<210> 73  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 73  
aatctcccaa tcatcactcg  
20

<210> 74  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 74  
tgctgaggtg taggtgctgt  
20

<210> 75  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 75  
tgtaactgct gaggtgtagg  
20

<210> 76  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 76  
tgtcgtgttt tcctgagtac  
20

<210> 77  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotides

<400> 77  
agttgtggct ttgtggaata  
20

<210> 78  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 78  
atggagatgg tgatacaagc  
20

<210> 79  
<211> 20  
<212> DNA



<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 79

ggatgattga cttggcgtgt

20

<210> 80

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 80

aggtctctgt ggatgattga

20

<210> 81

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 81

attctgatga cttctggtgc

20

<210> 82

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 82

gctgtatgga tttttatctt

20

<210> 83

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 83

tacagaacaa tcccaaagtc

20

<210> 84  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 84  
atcctcgtcc caccataaaa  
20

<210> 85  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 85  
ctctcatctc ttttcttttt  
20

<210> 86  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 86  
gtctctcatc tcttttcttt  
20

<210> 87  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 87  
ccgattcaag gagggttctg  
20

<210> 88  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 88  
tggatgggtg tttttggaga  
20

<210> 89  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 89  
ctgcctggat ggggtgtttt  
20

<210> 90  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 90  
ggacaggaaa cgcaccatat  
20

<210> 91  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 91  
ctcatttggt tcagtggaca  
20

<210> 92  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 92  
tctctcactc atttgtttca  
20

<210> 93

<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide'

<400> 93  
actctctcac tcatttggtt  
20

<210> 94  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 94  
gaactctctc actcatttgt  
20

<210> 95  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 95  
tcctgaactc tctcactcat  
20

<210> 96  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 96  
ttgctactct cctgaactct  
20

<210> 97  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 97

29  
20

tttgttgcta ctctcctgag

<210> 98  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 98  
cttttgttgc tactctoctg  
20

<210> 99  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 99  
gctactctcc tgaactctct  
20

<210> 100  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 100  
ttccttttgt tgctactctc  
20

<210> 101  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 101  
atattatttc cttttgttgc  
20

<210> 102  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 102  
atatgttcat ttattttcct  
20

<210> 103  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 103  
tttattttcc tttgttgct  
20

<210> 104  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 104  
tgttcattta ttttcctttt  
20

<210> 105  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 105  
atttaacata taagcaaaca  
20

<210> 106  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 106  
ctgcctggta ccctgttttt  
20

<210> 107  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 107  
ctgcctggaa ggggtgtttt  
20

<210> 108  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Antisense oligonucleotide

<400> 108  
ctgcctggta cgggtgtttt

C3  
concord